INVENTION DISCLOSURE DOCUMENT

Horn Credit System

A Technology-Driven IoT Credit System for Vehicular Horn Usage Control

Field	Invention Disclosure
Inventor	Jaydeep Buch, Citizen, Ahmedabad, Gujarat, India
Date of Conception	March 2026 (concept origin: approx. 2011)
Date of Disclosure	24 March 2026
Document Purpose	Provisional patent filing / Attorney briefing document
Commercial Intent	None. Defensive patent for public benefit only.
Confidentiality	Confidential until filed. Not for public distribution.

1. Title of Invention

Horn Credit System: An IoT-Based Personal Credit Ledger for Vehicular Horn Usage Management, with Silent Zone Enforcement, Surge Detection, and Surplus Credit Trading.

2. Field of Invention

This invention relates to embedded electronics, Internet of Things (IoT) systems, digital credit management platforms, and civic behaviour modification technology. Specifically, it provides a method and system for quantifying, tracking, limiting, and incentivising responsible vehicular horn usage through a personal credit account mechanism linked to a national vehicle registry.

3. Background and Problem Statement

Vehicular horn noise is a significant and inadequately controlled contributor to urban noise pollution across India and globally. The World Health Organization has identified chronic noise exposure as the second-largest environmental health risk in urban areas, linked to migraines, hypertension, sleep disorders, and cardiovascular disease.

Existing legal mechanisms — including provisions in the Motor Vehicles Act 1988 and the Environment Protection Act 1986 — are insufficient to control habitual horn misuse at scale. Enforcement requires human presence; fines are infrequent and easily disputed; and no positive incentive exists for quiet, disciplined driving. No persistent behavioral or economic signal has previously been applied to this problem at the individual vehicle level.

The Carbon Credit model, now globally established, proved that converting an invisible negative externality (emissions) into a quantified, personally accountable, and tradeable resource produces measurable behavioral change at scale. The present invention applies this proven economic mechanism to vehicular horn usage.

4. Summary of Invention

The Horn Credit System is a method and apparatus that: (a) allocates a fixed digital credit balance to each registered vehicle at the time of RTO registration; (b) automatically deducts credits upon each horn activation event via an embedded IoT Horn Monitoring Module; (c) applies differential deduction rates in designated Silent Zones via localised zone control units; (d) detects and flags surge activity (rapid horn use indicative of a secondary driver or aggressive behavior); (e) enables surplus credit trading between registered vehicle owners on a state-level exchange; and (f) links cumulative credit behavior to a Government Civic Points score with reward and enforcement consequences.

5. Novelty and Inventive Step

To the best of the inventor's knowledge, no prior art exists for the following specific combination:

- **Element 1:** Personal horn usage credit ledger linked to individual vehicle registration
- **Element 2:** Automatic per-event credit deduction via embedded horn circuit tap module
- **Element 3:** Silent Zone differential deduction using localised IoT zone control unit broadcasting
- **Element 4:** Surge detection algorithm (configurable threshold, e.g. 5+ events in 30 seconds) triggering secondary driver alert and civic point penalty
- **Element 5:** Surplus credit trading on a regulated exchange — behavioural reward monetisation
- **Element 6:** Government Civic Points integration — dual-track score linking horn credit behaviour to registration renewal, licensing, and enforcement
- **Element 7:** Tamper detection via self-reporting heartbeat signal with registration hold consequence

Prior art in noise monitoring systems and IoT vehicle tracking exists but does not encompass the personal credit ledger, trading mechanism, or civic points integration as a unified system.

6. Detailed Description of Preferred Embodiment

6.1 Horn Monitoring Module (Edge Layer)

- Microcontroller-based embedded unit (ARM Cortex-M class or equivalent)
- Passive horn circuit tap — detects activation without interfering with horn operation
- GPS module recording timestamp and geolocation of each horn event
- Event classifier distinguishing: single tap, sustained blast (2+ seconds), rapid sequence
- Tamper detection: accelerometer + case-open sensor + periodic heartbeat signal to central platform
- Local encrypted buffer: 7-day event log for connectivity loss periods
- Connectivity: 4G/LTE eSIM primary; Bluetooth LE to owner smartphone as fallback

6.2 Silent Zone Control Unit

- Fixed installation at perimeter of designated sensitive location (hospital, school, court, library, residential zone)
- Broadcasts low-power BLE or DSRC signal identifying zone and deduction multiplier (default: 5×)
- Registered modules within range enter Silent Mode automatically
- Optional: electronic attenuation of horn sound output by 60–70% (safety floor maintained)
- Violation alerts transmitted to traffic enforcement authority in real time

6.3 Central Platform (National Horn Credit Registry)

- Credit ledger per vehicle, linked to VAHAN (MoRTH national vehicle database) and Aadhaar-linked driver profile
- Immutable event log: every horn event recorded with timestamp, location, deduction, and running balance
- SMS and mobile app notification system: balance updates, low balance warnings, surge alerts, government notices
- Horn Credit Exchange: regulated marketplace for surplus credit trading between registered owners
- Government Civic Points engine: dual-track scoring with reward thresholds (clean day, weekly excellence) and enforcement thresholds (daily limit breach, surge, silent zone violation, credit exhaustion)
- Integration pathway: FASTag ecosystem (NHAI), mParivahan app, RTO digital payment portal

7. Outline of Claims (for Attorney Drafting)

The following represent the inventor's intended claim scope. Final claim language to be drafted by patent attorney.

Method Claims (how the system works):

- Method of controlling vehicular horn usage comprising: allocating a credit balance at registration; detecting horn activation via embedded sensor; deducting credits per event; applying differential deduction in Silent Zones; detecting surge patterns; enabling surplus trading; linking behavior to civic points scoring.

System Claims (the integrated architecture):

- System comprising: Horn Monitoring Module; Silent Zone Control Unit; National Horn Credit Registry; Horn Credit Exchange; Government Civic Points Engine; mobile notification system; and tamper detection subsystem.

Apparatus Claims (the physical module):

- Horn Monitoring Module comprising: microcontroller; horn circuit tap sensor; GPS unit; event classifier; tamper detection subsystem; encrypted local buffer; and wireless transmission unit.

8. Known Prior Art and Distinction

Prior Art Area	What Exists	What Horn Credit Adds
Carbon Credit systems	Market-based emission credit allocation and trading	Application to individual sound/noise behavior; personal ledger; IoT integration
Vehicle IoT / telematics	GPS tracking, speed monitoring, insurance black boxes	Horn-specific event detection, credit mechanism, civic scoring
Noise monitoring systems	Ambient decibel measurement, urban noise maps	Attribution to individual vehicle; personal accountability; deduction logic
Smart city enforcement	Camera-based fine systems for horn use in some cities	Proactive credit model vs. reactive fine model; no prior credit ledger or trading

9. Drawings Required (to be prepared by attorney)

- Figure 1: System Architecture Diagram — three-layer overview (Edge / Network / Platform)
- Figure 2: Horn Monitoring Module — component block diagram
- Figure 3: Silent Zone Control Unit — signal broadcast and module interaction
- Figure 4: Credit Ledger Flow — event to deduction to balance to exchange
- Figure 5: Government Civic Points Engine — scoring triggers, thresholds, consequences
- Figure 6: Surge Detection Algorithm — event timeline, threshold logic, alert flow

10. Inventor Declaration

I, Jaydeep Buch, citizen of India, residing in Ahmedabad, Gujarat, hereby disclose that the invention described in this document is original to me. The concept was first conceived by me approximately in the year 2011, arising from personal observation of the health impact of vehicular horn noise on a family member. This document is prepared for the purpose of filing a provisional patent application with the Indian Patent Office.

I confirm that this invention is disclosed here for defensive patent purposes. It is my intention that this invention remain accessible for public benefit and that no exclusive commercial exploitation be pursued by the inventor.

This is not a commercial claim. It is a citizen's contribution.

Inventor Signature	Date
Jaydeep Buch Ahmedabad, Gujarat, India	**24 March 2026**

Attorney Notes

Priority date to be established at provisional filing. Inventor requests: (1) Method, System, and Apparatus claim sets. (2) Confirmation of patentability of the unified system as a whole, particularly the combination of Elements 1–7 listed in Section 5. (3) Advice on whether a PCT (international) application is warranted given global applicability of the invention. (4) Guidance on parallel Defensive Publication to protect public domain access.